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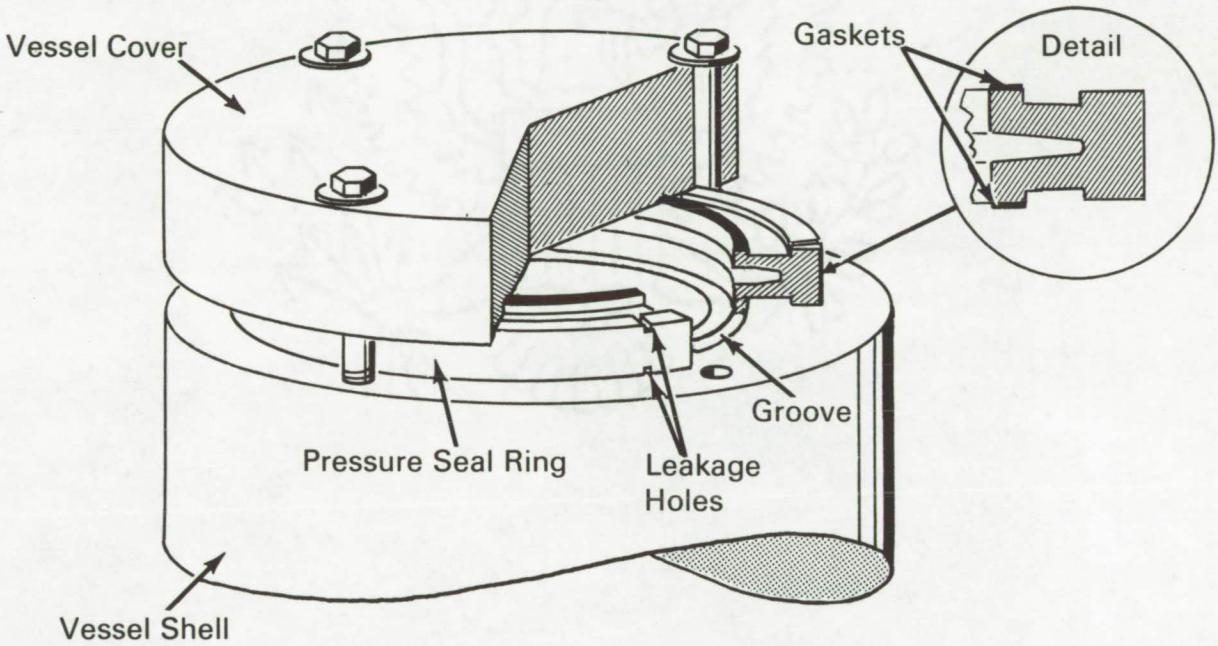
NASA TECH BRIEF

Pressure Seal Ring May Be Effective Over Wide Temperature Range



The problem:

To seal bolted flange joints in pressure vessels containing fluids whose temperatures can vary over a wide range. Excessive thermal expansion or contraction of the flanges can destroy the effectiveness of a standard gasketed seal.

The solution:

A positive pressure seal ring which mates with grooves in the flanges and compensates for the expansion or contraction of a gasketed joint.

How it's done:

The flanges are grooved over a portion of the mating surfaces instead of having a tongue and groove configuration as in some designs. A standard gasket is placed in each groove, the tongued seal ring is inserted between the two flanges, and the bolts are tightened until the outer surfaces of the flanges are brought to bear on the stepped-down surfaces of the seal ring. When the proper torque has been applied to the bolts, the spring-back action of the seal ring tongues should ensure a substantially uniform contact pressure on the gaskets over a relatively wide temperature range. Six equally spaced holes are drilled through the outer flange of the ring to prevent pressure buildup during assembly.

(continued overleaf)

Note:

This design is in the conceptual stage only; as of the date of this Tech Brief neither a model nor a prototype has been constructed.

Patent status:

No patent action is contemplated by NASA.

Source: North American Aviation, Inc., under contract to Marshall Space Flight Center (M-FS-486)